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Masanori Ogawa

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COOPER & DUNHAM, LLP
30 Rockefeller Plaza
20th Floor
NEW YORK, NY 10112

EXAMINER

CHOI, PETER Y

ART UNIT

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PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

The time period for reply, if any, is set in the attached communication.

Office Action Summary	Application No. 10/590,835	Applicant(s) OGAWA ET AL.	
	Examiner PETER Y. CHOI	Art Unit 1794	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☒ Responsive to communication(s) filed on 19 October 2009.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1,2,5,16 and 18-28 is/are pending in the application.
- 4a) Of the above claim(s) 27 and 28 is/are withdrawn from consideration.
- 5) ☐ Claim(s) _____ is/are allowed.
- 6) ☒ Claim(s) 1,2,5,16 and 18-26 is/are rejected.
- 7) ☐ Claim(s) _____ is/are objected to.
- 8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 24 August 2006 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
 2. ☐ Certified copies of the priority documents have been received in Application No. _____.
 3. ☒ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- | | |
|---|---|
| 1) <input checked="" type="checkbox"/> Notice of References Cited (PTO-892) | 4) <input type="checkbox"/> Interview Summary (PTO-413) |
| 2) <input type="checkbox"/> Notice of Draftperson's Patent Drawing Review (PTO-948) | Paper No(s)/Mail Date. _____ |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application |
| Paper No(s)/Mail Date _____ | 6) <input type="checkbox"/> Other: _____ |

DETAILED ACTION

Election/Restrictions

1. Restriction to one of the following inventions is required under 35 U.S.C. 121:
 - I. Claims 1, 2, 5, 16, and 18-26, drawn to a fire resistant laminated sheet, classified in class 442, subclass 136.
 - II. Claims 27 and 28 drawn to a method of making a fire resistant laminated sheet, classified in class 156, subclass 60.
2. Inventions I and II are related as product and process of making a product. The inventions are distinct if either or both of the following can be shown: (1) that the process as claimed can be used to make another and materially different product or (2) that the product as claimed can be made by another and materially different process (MPEP § 806.05(f)). In the instant case, the product of claims 1, 2, 5, 16, and 18-26 can be made by a materially different method, wherein the fire retardant capsules are applied by spraying dry fire retardant capsules on a surface of the porous material and then heating the sheet material by calendaring or in an oven.
3. Newly submitted claims 27 and 28 are directed to an invention that is independent or distinct from the invention originally claimed for the reasons set forth above. Since applicant has received an action on the merits for the originally presented invention, this invention has been constructively elected by original presentation for prosecution on the merits. Accordingly, claims 27 and 28 are withdrawn from consideration as being directed to a non-elected invention. See 37 CFR 1.142(b) and MPEP § 821.03.

Claim Rejections - 35 USC § 112

4. The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

5. Claims 1, 2, 5, 16, and 18-26 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention.

Regarding claims 1, 2, 5, 16, and 18-26, claim 1 recites that the fiber sheet and the porous material are bound together by spraying a water dispersion of fire retardant capsules on a side of the fiber sheet, putting the fiber sheet on the porous material in a manner such that the sprayed side of the fiber sheet contacts the porous material and pressing the resultant laminated sheet with heating. Applicants' specification as originally filed does not provide support for the claimed limitations. Specifically, Applicants' specification does not provide support for the fiber sheet and the porous material being bonded together by a water dispersion of fire retardant capsules.

Claim Rejections - 35 USC § 103

6. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person

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having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

7. Claims 1, 2, 16, and 23-26 are rejected under 35 U.S.C. 103(a) as obvious over USPN 6,316,088 to Ogawa in view of USPN 6,291,068 to Wang and US Pub. No. 2004/0053003 to Coates.

Regarding claims 1, 2, 16, and 23-26, Ogawa teaches a fire resistant laminated sheet, the laminated sheet comprising a fiber sheet bound with a sulfomethylated and/or sulfimethylated phenolic resin which is added to the fiber sheet, and a porous material, wherein the fiber sheet and the porous material are bonded together by spraying a water dispersion of fire retardant material on a side of the fiber sheet, putting the fiber sheet on the porous material in a manner such that the sprayed side of the fiber sheet contacts the porous material and pressing the resultant laminated sheet with heating (see entire document including column 1 line 6 to column 2 line 48, column 3 lines 54-59, column 5 lines 6-24, column 6 line 7 to column 13 line 3, column 17 lines 52-62, Examples 1-7, claims 1-14).

Additionally, the prior art teaches that impregnating a resin, such as a phenolic resin, in an amount between 2 to 500 g/m², gives a high rigidity to the base sheet to improve the dimensional stability of the base sheet against temperature change or humidity change. Additionally, the prior art teaches that the base sheet may comprise a variety of basis weights, such as 120 g/m² (*see for example* Id., Example). Therefore, based on the totality of the teachings of the prior art, it would have been obvious to one of ordinary skill in the sheet art at the time the invention was made to form the laminated sheet of the prior art, wherein the resin is applied in an amount between 2 to 500 g/m² and the base sheet is, for example, 120 g/m², motivated by the desire of forming a conventional laminated sheet having the desired amounts of

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resin predictably suitable to give a high rigidity to the base sheet to improve the dimensional stability of the base sheet against temperature change or humidity change. It should be noted that in the case where the claimed ranges overlap or lie inside ranges disclosed by the prior art, a prima facie case of obviousness exists.

It should be noted that the method of forming the laminated sheet, such as bonding the fiber sheet and the porous material by spraying a water dispersion of fire retardant material on a side of the fiber sheet, putting the fiber sheet on the porous material in a manner such that the sprayed side of the fiber sheet contacts the porous material and pressing the resultant laminated sheet with heating, are interpreted as product by process limitations. Absent a showing to the contrary, it is Examiner's position that the article of the applied prior art is identical to or only slightly different than the claimed article. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production. If the product in the product-by-process claim is the same as or obvious from a product of the prior art, the claim is unpatentable even though the prior product was made by a different process. The burden has been shifted to Applicants to show unobvious differences between the claimed product and the prior art product. The applied prior art either anticipated or strongly suggested the claimed subject matter. It is noted that if Applicants intend to rely on Examples in the specification or in a submitted declaration to show unobviousness, Applicants should clearly state how the Examples of the present invention are commensurate in scope with the claims and how the Comparative Examples are commensurate in scope with the applied prior art.

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Regarding claims 1, 2, 16, and 23-26, Ogawa does not appear to teach that the fire retardant is a fire retardant capsule consisting of a water soluble fire retardant powder covered with a water insoluble synthetic resin shell, and that the water soluble fire retardant powder is selected from the group consisting of ammonium phosphate, ammonium polyphosphate, ammonium sulfamate, ammonium sulfate and ammonium silicate. However, Ogawa teaches the inclusion of a fire retardant (Ogawa, column 4 lines 7-51, Example 4). Since Ogawa is silent in regards to the fire retardant, it would have been necessary and therefore obvious to look to the prior art for conventional fire retardant compositions added to molded articles. Wang provides this conventional teaching, showing that it was known in the molded article art to incorporate a thermoplastic resin-coated ammonium polyphosphate flame retardant comprising a core material encapsulated by a water insoluble resin (Wang, column 1 line 7 to column 2 line 56, column 4 line 58 to column 6 line 50, column 7 lines 23-33, column 9 lines 28-58, column 15 line 45 to column 16 line 20). Wang teaches that the core material is water-soluble or can be made hardly water-soluble. Wang teaches that the thermoplastic resin-coated ammonium polyphosphate flame retardant is excellent in water resistance, resistance to organic solvents and chemical resistance, and has a high affinity for thermoplastic resins. Additionally, when incorporated into a thermosetting resin or thermoplastic resin-based molding material, the flame retardant has a high hygroscopicity-controlling effect. It would have been obvious to one of ordinary skill in the molded articles art at the time the invention was made to form the fiber sheet of the prior art, wherein the fire retardant comprises the flame retardant as taught by Wang, motivated by the desire of forming a conventional fiber sheet with a fire retardant known in the art to be predictably suitable for use in molded articles since the flame retardant is excellent in water

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resistance, resistance to organic solvents and chemical resistance, and has a high affinity for thermoplastic resins in addition to providing a high hygroscopicity-controlling effect.

Regarding claims 1, 2, 16, and 23-26, the prior art does not appear to teach that the fire resistant laminated sheet has a ventilation resistance in the range between 0.1 and 100 kPa·s/m to give the fire resistant laminated sheet an excellent acoustic property. However, Coates teaches a substantially similar thermoformable acoustic sheet suitable for use as head linings or as automobile interiors, comprising a web of fibers which are film bonded or adhesive powder bonded to two nonwoven fabrics, wherein it is contemplated that the sheet may additionally comprise a flame retardant treatment, and wherein the resulting sheet has an air flow resistance of between 275 and 1100 mks Rayl (Coates, paragraphs 0001-0033, 0043, 0044, Examples 1-10). It should be noted that 1 Rayl is equal to 1 Pa·s/m. Coates teaches that the amount of adhesive treatment can be adjusted to control the total air flow resistance of the acoustic sheet. It would have been obvious to one of ordinary skill in the acoustic insulation art at the time the invention was made to form the acoustic insulation of the prior art, wherein the sheet has the air flow resistance as taught by Coates, motivated by the desire of forming a conventional acoustic insulation material having an air flow resistance known in the art to be predictably suitable for acoustic insulation material and predictably resulting from the prior art acoustic insulation. It should be noted that in the case where the claimed ranges overlap or lie inside ranges disclosed by the prior art a prima facie case of obviousness exists.

Regarding claim 2, the prior art teaches that a hot melt adhesive powder is mixed in the water dispersion of the fire retardant capsules (Ogawa, column 1 line 6 to column 2 line 48, column 3 lines 54-59, column 5 lines 6-24, column 6 line 7 to column 13 line 3).

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Regarding claims 16 and 23, the prior art teaches a molded article wherein the fire resistant fiber sheet is molded into a prescribed shape (Ogawa, column 1 line 6 to column 2 line 48, column 3 lines 54-59, column 5 lines 6-24, column 6 line 7 to column 13 line 3).

Regarding claim 23, the prior art teaches a fire resistant acoustic material for cars made of a molded article (Ogawa, column 6 line 7 to column 13 line 3).

Regarding claims 24 and 26, the prior art teaches that the resistant fiber sheet is press-molded with heating, the fiber sheet comprising a fiber having a low melting point of below 180°C (Ogawa, column 6 line 7 to column 13 line 3, Examples 1-7; Coates, paragraphs 0001-0033). It should be noted that Applicants' specification at page 6 teaches that fibers such as polyethylene fiber, polyester fiber, polyamide fiber, and polyvinyl chloride fiber have a low melting point of below 180°C.

Regarding claims 24 and 26, the prior art does not appear to specifically teach that the fire retardant capsules are fixed in the fiber sheet by the fiber having a low melting point during press molding with heating. However, it is reasonable for one of ordinary skill in the molded articles art to presume that the fire retardant capsules are fixed in the fiber sheet by the fiber having a low melting point during press molding with heating. Ogawa teaches that the porous material and fiber sheet are heated and press-mold. Additionally, Wang teaches that the thermoplastic resin-coated flame retardant has a high affinity for thermoplastic resins. Therefore, the prior art appears to teach the claimed structure. Additionally, since Applicants' specification teaches that fibers such as polyethylene fiber, polyester fiber, polyamide fiber, and polyvinyl chloride fiber have a melting point of below 180°C, it naturally flows from the teachings of the prior art that one of ordinary skill in the art would expect the fibers to

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additionally fix the fire retardant capsules in the fiber sheet. Since the prior art teaches a substantially similar structure and composition (a molded fiber resistant fiber sheet comprising the claimed fire retardant capsule and sulfimethylated and/or sulfomethylated phenolic resin) as the claimed invention, the fire retardant capsules appear to inherently be fixed in the fiber sheet by the fiber having a low melting point during press molding with heating, absent evidence to the contrary. Additionally, the method of forming the fire resistant laminated sheet is interpreted as a product by process limitation. Absent a showing to the contrary, it is Examiner's position that the article of the applied prior art is identical to or only slightly different than the claimed article. Even though product-by-process claims are limited by and defined by the process, determination of patentability is based on the product itself. The patentability of a product does not depend on its method of production.

Regarding claims 25 and 26, the prior art teaches that fire retardant capsule consists of a water soluble fire retardant powder covered with a water insoluble synthetic resin shell, and that the water soluble fire retardant powder is selected from the group consisting of ammonium phosphate, ammonium polyphosphate, ammonium sulfamate, ammonium sulfate and ammonium silicate. (Wang, column 1 line 7 to column 2 line 56, column 4 line 58 to column 6 line 50, column 7 lines 23-33, column 9 lines 28-58, column 15 line 45 to column 16 line 20).

8. Claim 2 is rejected under 35 U.S.C. 103(a) as obvious over Ogawa in view Wang and Coates, as applied to claims 1, 2, 16, and 23-26 above, and further in view of USPN 6,362,269 to Ishihata.

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Regarding claim 2, the prior art does not appear to teach that the fire retardant capsules are added to the fiber sheet in an amount of between 5% and 80% by mass relative to the mass of the fiber sheet without the capsules. Since the prior art is silent with regards to the specific amount of fire retardant, it would have been necessary and thus obvious to look to the prior art for conventional add-on amounts in molded articles. Ishihata provides this conventional teaching showing that it is known in the molded articles art to form molded articles comprising an aromatic resin, fibers and flame retardant particles comprising a particle encapsulated in a resin (Ishihata, column 1 lines 5-9, column 3 lines 1-35, column 15 line 34 to column 17 line 36, column 23 line 12 to column 26 line 19). Ishihata teaches that the flame retardant particles are added to the resin, wherein the amount of flame retardant particles added to the resin are between 0.1 to 25 parts by weight (Ishihata, column 26 lines 8-20). Therefore, it would have been obvious to one of ordinary skill in the molded articles art at the time the invention was made to form the fiber sheet of the prior art, with the percentage of flame retardant particles, as taught by Ishihata, motivated by the desire of forming a conventional molded article having fire retardant particles with a percentage of particles known in the art to be suitable for use in molded articles.

9. Claim 5 is rejected under 35 U.S.C. 103(a) as being unpatentable over Ogawa in view Wang and Coates, as applied to claims 1, 2, 16, and 23-26 above, and further in view of USPN 5,188,896 to Suh.

Regarding claim 5, the prior art does not appear to teach that the fibers are hollowed or a mixture of solid and hollowed fibers. However, Suh teaches a thermal insulation comprising hollow thermoplastic fibers and polymeric fibers wherein the fibers are coated with a synthetic

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resin and a flame retardant (Suh, column 1 lines 13-49, column 4 line 13 to column 5 line 48, Example 3). It would have been obvious to one of ordinary skill in the fire retardant fiber art to form the fire retardant fiber sheet of the prior art, wherein the fibers comprise hollow thermoplastic fibers and polymeric fibers, as taught by Suh, motivated by the desire of forming a conventional fire retardant fiber sheet with fire resistant properties which is lightweight and provides good fire resistance, and such a combination was known and the resulting product predictable at the time the invention was made.

10. Claims 18-22 are rejected under 35 U.S.C. 103(a) as being unpatentable over Ogawa in view Wang and Coates, as applied to claims 1, 2, 16, and 23-26 above, and further in view of US Pub. No. 2005/0263345 to Erickson.

Regarding claims 18-22, the prior art does not appear to teach that porous material sheets are laminated onto both sides of the fiber sheet. However, the prior art teaches that the material of the prior art has excellent sound proof property, and is suitable for use in headlining of the car, and interior trim material. Additionally, Erickson teaches a substantially similar sound absorbing panel for a vehicle, such as for a trim panel and a headliner, the panel comprising an acoustic absorptive inner portion and first and second acoustic flow-resistive outer portions, wherein the inner portion is a fibrous material having a weight generally in the range of about 200 to 1000 grams per square meter, and wherein the outer portions provide a plurality of air passages adapted to attenuate sound (Erickson, paragraphs 0002-0016, 0032-0037, 0042-0046, claims 1-23). Erickson teaches that the outer layers may be bonded or adhered to the inner layer by a porous adhesive, such as powder or perforated films, to ensure a bond between the layers.

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Erickson teaches that the porous adhesive is intended to provide a composite structure that maintains porosity and provides the desired acoustic absorption by minimizing reflection of sound waves. Erickson teaches that a thermoplastic barrier film layer may be applied between the inner and outer layer. It would have been obvious to one of ordinary skill in the acoustic panel art at the time the invention was made to form the acoustic panel of the prior art, wherein the panel comprises porous material sheets laminated on both sides of the fiber sheet, motivated by the desire of forming a conventional acoustic panel having a structure known in the art as being predictably suitable for forming an acoustic panel having a high degree of acoustic performance with improved bending strength and the ability to accommodate the use of a barrier film and other panel component materials.

Regarding claims 19-22, the prior art does not appear to teach that porous material is laminated onto one or both sides of the fiber sheet though thermoplastic resin film(s) having a thickness of between 10 and 200 μm . However, Erickson teaches that a thermoplastic barrier film layer may be applied between the inner and outer layer based on the desired impermeability. Additionally, it naturally flows from the teachings of the prior art that the thickness of the barrier film is related to the barrier properties of the film and the thickness of the resulting composite, as a thicker film would predictably comprise greater barrier properties and comprise a thicker composite. Therefore, it would have been obvious to one of ordinary skill in the acoustic panel art at the time the invention was made to form the panel of the prior art, additionally comprising a thermoplastic film having an optimal thickness, as the prior art suggests that the barrier film may be used where impermeability requirements are desired, and motivated by the desire of

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forming a conventional acoustic panel having the desired impermeability and thickness and weight suitable for the intended application.

Regarding claim 20, the prior art teaches that a hot melt adhesive powder is scattered onto one or both sides of the fiber sheet in an amount of between 1 and 100 g/m² and the porous material sheet(s) is (are) laminated onto the fiber sheet through the scattered layer of hot melt adhesive powder (Ogawa, column 1 line 6 to column 2 line 48, column 3 lines 54-59, column 5 lines 6-24, column 6 line 7 to column 13 line 3, Examples 1-7, claims 1-14).

Regarding claims 21 and 22, the prior art teaches a laminated material is molded into a prescribed shape (Ogawa, column 6 line 7 to column 13 line 3, Examples 1-7, claims 1-14).

Regarding claim 22, the prior art does teaches that the ventilation resistance of the molded article is in the range of between 0.1 and 1.1 kPa · s/m (Coates, paragraphs 0001-0033, 0043, 0044, Examples 1-10). It should be noted that in the case where the claimed ranges overlap or lie inside ranges disclosed by the prior art a prima facie case of obviousness exists.

Response to Arguments

11. Applicants' arguments with respect to claims 1, 2, 5, 16, and 18-26 have been considered but are moot in view of the new grounds of rejection.

Conclusion

12. Applicants' amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicants are reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

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A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to PETER Y. CHOI whose telephone number is (571)272-6730.

The examiner can normally be reached on Monday - Friday, 08:00 - 15:00.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Larry Tarazano can be reached on (571) 272-1515. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

/Peter Y Choi/
Examiner, Art Unit 1794

/Andrew T Piziali/
Primary Examiner, Art Unit 1794